

NUTRITION ISSUES AND CONCERNS



DIABETES MELLITUS

Diabetes mellitus is a chronic disease characterized by elevated glucose in the blood and urine. Although the exact cause of diabetes is unknown, a genetic component of the disease is recognized; environmental and immunologic factors may also play roles. There are two types of diabetes mellitus. With type 1, the body does not produce insulin, and daily injections are required. With type 2, the body continues to produce insulin, but is unable to make enough or properly use what is made.

Prevalence

- Type 1 occurs in infants, children, and adolescents and accounts for 5 to 10 percent of all cases of diabetes mellitus.
- Type 2 has typically been diag-

nosed after age 40 and accounts for 90 to 95 percent of all cases of diabetes mellitus; however, because of the increasing prevalence of childhood obesity, the number of children and adolescents with type 2 is increasing.

Screening

Type 1

- Children and adolescents should be screened for type 1 diabetes mellitus if they have polyuria, polydipsia, polyphagia, and weight loss.
- A random blood glucose level over 200 mg/dL (11.1 mmol/L) or a fasting plasma glucose level over 126 mg/dL (7.0 mmol/L) is sufficient to make a diagnosis.

Type 2

- Children and adolescents should be screened for type 2 diabetes

mellitus if they are overweight (BMI > 85th percentile for age and gender, weight for height > 85th percentile, or weight > 120 percent of ideal [50th percentile] for height) and have two of the following risk factors:

A history of type 2 diabetes mellitus in first- and second-degree relatives

Belonging to a certain racial/ethnic group (American Indian, African American, Hispanic American, Asian/South Pacific Islander)

Signs of insulin resistance or conditions associated with it (acanthosis nigricans, hypertension, dyslipidemia, polycystic ovary syndrome)

- Screening should be done every 2 years starting at age 10 or at the onset of puberty, whichever occurs first.

Treatment

Type 1

- Treatment involves careful attention to insulin administration, food intake, and physical activity to promote acceptable blood glucose and lipid levels.
- Many children and adolescents receive a mixed dose of rapid- and immediate-acting insulin twice a day, before breakfast and before the evening meal.
- Other regimens include (a) injections of rapid-acting insulin before meals and longer-acting insulin once or twice a day and (b) using an insulin pump, which delivers a small dose of rapid-acting insulin continuously, and an injection of a larger dose of insulin before meals.
- Blood glucose monitoring two to four times per day is recom-

mended to help identify blood glucose patterns and to adjust insulin and/or food intake.

Type 2

- Treatment focuses on lowering blood glucose levels, whether by making lifestyle changes (eating healthy foods, increasing level of physical activity) or by using insulin, glucose-lowering medications, or a combination of these methods.
- Blood glucose monitoring varies from two to four times per day depending on the method.

Counseling

- Nutrition counseling should be provided at diagnosis.
- Nutrition counseling is essential to self-management of diabetes mellitus and should be presented according to the developmental readiness of the child or adolescent.

- Children and adolescents need instruction in the daily management of diabetes mellitus.
- Older children and adolescents can share responsibility for their own care.
- Children, adolescents, and their families will need help preparing for living with diabetes mellitus.
- Families need to learn basic diabetes management skills (insulin administration, blood glucose monitoring, meal and snack planning).
- Children and adolescents need to eat meals and snacks at consistent times daily, keeping carbohydrate content consistent; identify food groups and portion sizes; and recognize and know how to treat low blood glucose levels.

For more information, see *Bright Futures in Practice: Nutrition, Diabetes Mellitus* chapter.

EATING DISORDERS

Eating disorders range from unhealthy eating behaviors and preoccupation with body size to life-threatening disorders, such as anorexia nervosa and bulimia nervosa. Consult the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)*, published by the American Psychiatric Association, for diagnostic criteria.

Significance

- Eating disorders occur in both sexes and in all socioeconomic and racial and ethnic groups.
- About 1 to 2 percent of female adolescents have anorexia nervosa or bulimia nervosa.
- Anorexia nervosa mortality rates vary from 5 to 8 percent to a high of 20 percent.

- Causes of death from anorexia nervosa include cardiac arrhythmia, acute cardiovascular failure, gastric hemorrhaging, and suicide.
- Major medical complications of eating disorders include the following:
 - Cardiac arrhythmia
 - Dehydration and electrolyte imbalances
 - Delayed growth and development
 - Endocrinological disturbances
 - Gastrointestinal problems
 - Oral health problems
 - Osteopenia, osteoporosis
 - Protein/calorie malnutrition

Nutritional Inadequacies

Following are common nutritional inadequacies in children and adolescents with eating disorders:

- *Calories*—Sometimes fewer than 500 per day (a hallmark of anorexia nervosa)
- *Protein*—Resulting from inadequate consumption of protein (meat, poultry, fish, eggs, dairy products)
- *Calcium*—Resulting from inadequate consumption of calcium (dairy products, calcium-fortified foods)
- *Zinc*—Resulting from inadequate consumption of zinc and protein (milk, meat, whole grains)
- *Vitamin B₁₂*—Resulting from inadequate consumption of dairy products or eggs

Screening, Assessment, and Treatment

Early identification of children and adolescents with eating disorders has been linked to better long-term outcomes.

Screening

- Conduct a physical examination.
- Measure height and weight and plot on a standard growth chart. Calculate body mass index (BMI) or refer to a BMI chart.
- Obtain a health and weight history.
- Obtain information about body image and eating and physical activity behaviors.
- Conduct a brief psychosocial assessment. If any warning signs (depression, constant thoughts about food or weight, pressure from others to be a

certain shape or size, history of physical or sexual abuse or other traumatizing life event) are present, further screening and assessment are required.

- Consult with health professionals experienced in eating disorders to help distinguish typical child or adolescent eating behaviors from eating disorders.

Assessment and Treatment

- Comprehensive assessment and treatment require an interdisciplinary team of health professionals experienced in treating eating disorders.
- If a child or adolescent is at high risk for an eating disorder, obtain a medical history and conduct a physical, nutritional, and psychiatric/psychological assessment.

- At minimum, children and adolescents with eating disorders need to be followed long term by a physician, dietitian, and mental health professional. This team can provide medical care and monitoring, nutrition counseling, psychiatric evaluation, and individual and/or family therapy.
- Consider referral to an eating disorder treatment program if an interdisciplinary team is not available or if hospitalization is indicated.
- Consider hospitalization if the child or adolescent is severely malnourished, shows metabolic disturbances, or is at risk for suicide.

For more information, see *Bright Futures in Practice: Nutrition, Eating Disorders* chapter.

FOOD ALLERGY

Categories

In general, there are two categories of adverse reactions to foods. Only about 5 percent of all adverse reactions to foods and food additives are true allergies.

Food Allergy/Hypersensitivity

- This occurs when the immune system reacts to a particular food protein.
- Trace amounts of an allergenic food may be sufficient to trigger an adverse reaction.
- Symptoms—itching, hives, rash, vomiting, diarrhea, abdominal pain, and swelling of the lips, tongue, or face—can occur within seconds or as long as 72 hours after exposure.

Food Intolerance

- This is a non-immune-mediated reaction to foods or food additives.
- Reactions, which are usually dose-dependent, include (a) intolerance due to lack of an essential enzyme, and (b) reactions to food ingredients (pharmacologically active chemicals, naturally occurring pharmacologically active agents, and toxic compounds).

Prevention/Early Intervention

- Screening high-risk families and implementing dietary and environmental measures early may greatly reduce or delay food allergies.
- The most effective way to prevent adverse food reactions and

help children tolerate food is to remove from the diet any foods that cause reactions.

Diagnosis

Diagnosis requires a medical history, dietary history, and physical examination, and may include immunologic testing and an elimination diet and food challenge.

Dietary History

- Ask parents to keep a record of all foods consumed and amounts, noting adverse reactions for 5 to 7 days.
- Ask mothers of exclusively or partially breastfed infants to keep a food record and note infant's symptoms.

Elimination Diet

- A diet in which certain foods are eliminated is the only reliable

- way to diagnose food allergy.
- Restrict diet no more than necessary, and carefully consider the number of foods eliminated, to reduce the risk of nutritional deficiencies and feeding problems.
 - Highly restricted diets for children younger than 7 should last no longer than 10 days.
 - Duration of the elimination diet will vary from 7 to 14 days up to 4 weeks depending on severity and variability of symptoms.
 - Elimination diets need to be followed by reintroducing foods one by one (unless expected reaction is life threatening).
 - Decide which foods to eliminate based on severity of symptoms, number of potentially unsafe foods, availability of affordable alternatives, and level of commitment to the diet.

- Eliminate foods most likely to cause an adverse reaction first.
- Continue an elimination diet until child becomes symptom-free.
- Mothers of exclusively breastfed infants may have to follow an elimination diet (with appropriate supplementation) until infant shows relief from symptoms.
- A formula change may be all that is needed for an exclusively formula-fed infant.

Food Challenges

- Challenges of eliminated foods should be performed before restricting the diet.
- If there is any chance of a severe adverse reaction, perform the food challenge with appropriate medical support.
- Never perform food challenges with potentially life-threatening foods.

- Test one food at a time.
- Start with a small portion of food, gradually increasing the portion every 4 hours until it is equivalent to a meal-size portion. If an adverse reaction occurs, no further testing of that food is required.
- Test new foods only when symptoms from previous challenges have cleared.

For more information, see *Bright Futures in Practice: Nutrition, Food Allergy* chapter.

HYPERLIPIDEMIA

Hyperlipidemia refers to an elevation in serum levels of any or all lipids such as total cholesterol (TC), triglycerides (TG), and lipoproteins. TC, TG, high-density lipoprotein cholesterol (HDL-C), and low-density lipoprotein cholesterol (LDL-C) may need to be

measured, based on assessed risk.

Increasing evidence suggests that atherosclerosis and coronary heart disease (CHD) involve processes that begin in childhood or adolescence.¹ Depending on family history, children at risk for hyperlipidemia should be selectively screened beginning at age 2.²

Screening

The table below lists major risk factors and recommended screening procedures for hyperlipidemia. Children and adolescents whose family history is unknown, particularly those with other risk factors, should be screened with a TC.²

The following risk factors are also associated with the develop-

Hyperlipidemia Screening Recommendations Based on Family History

Major Risk Factor	Recommended Screening Procedure
<ul style="list-style-type: none"> Parent or grandparent \leq 55 years of age diagnosed with coronary atherosclerosis (based on coronary arteriography), including those who have had balloon angioplasty or coronary artery bypass surgery 	<ul style="list-style-type: none"> Screen with fasting lipoprotein analysis (12-hour fast) Repeat lipoprotein analysis and calculate the average LDL-C
<ul style="list-style-type: none"> Parent or grandparent \leq 55 years of age with documented myocardial infarction, angina pectoris, peripheral vascular disease, cerebrovascular disease, or sudden cardiac death 	<ul style="list-style-type: none"> Screen with fasting lipoprotein analysis (12-hour fast) Repeat lipoprotein analysis and calculate the average LDL-C
<ul style="list-style-type: none"> Parent with high cholesterol level (\geq 240 mg/dl) Family history unknown 	<ul style="list-style-type: none"> Measure TC

Source: American Academy of Pediatrics.²

ment of atherosclerosis and CHD:²

- Family history of premature CHD, cerebrovascular disease, or occlusive peripheral vascular disease (< age 55 in siblings, parent, or sibling of parent)
- Cigarette smoking
- Elevated blood pressure
- Low HDL-C concentration (< 35 mg/dL)
- Severe obesity (BMI \geq 95th percentile)
- Diabetes mellitus
- Physical inactivity

Follow-Up: TC Screening

- If TC is < 170 mg/dL, rescreen within 5 years.
- If TC is between 170 and 199 mg/dL, measure TC again and calculate the average.
- If average TC is < 170 mg/dL, rescreen within 5 years.

- If average TC is \geq 170 mg/dL, screen with fasting lipoprotein analysis to calculate LDL-C.
- If TC is > 200 mg/dL, screen with fasting lipoprotein analysis to determine LDL-C.

Follow-Up: LDL-C Screening

- If average fasting LDL-C level is < 110 mg/dL, rescreen within 5 years.
- If average fasting LDL-C level is 110 to 129 mg/dL, reevaluate in 1 year.
- If average fasting LDL-C level is \geq 130 mg/dL, consider referral to a dietitian or a lipid center.

Source: Information on screening procedures has been adapted from AAP² with permission. The assistance of Robert L. Markowitz, M.D., Children's Hospital, Boston, is gratefully acknowledged.

References

1. Berenson GS, Srinivasan SR, Bao W, Newman III WP, Tracy RE, Wattigney WA. 1998. Association between multiple cardiovascular risk factors and atherosclerosis in children and young adults. *New England Journal of Medicine* 338(23):1650–1656.
2. American Academy of Pediatrics, Committee on Nutrition. 1998. Cholesterol in childhood. *Pediatrics* 101(1):141–147.

For more information, see *Bright Futures in Practice: Nutrition, Hyperlipidemia* chapter.

IRON-DEFICIENCY ANEMIA

CDC Screening Guidelines¹

Infants Newborn to 12 Months and Children 1 to 5 Years

Assess all infants and children ages 1 to 5 years for risk of iron-deficiency anemia. Screen those at high risk or with known risk factors using a standard laboratory test.

Universal Screening for Infants and Children at High Risk

Screen high-risk infants ages 9 to 12 months, and rescreen 6 months later (at 15 to 18 months). Screen high-risk children ages 2 to 5 annually. Include infants and children

- From families with low incomes
- Who are eligible for WIC
- Whose parents are migrants or recently arrived refugees

Selective Screening for Infants and Children with Known Risk Factors

Screen infants and children not at high risk, but who have known risk factors.

Screen preterm infants and low-birthweight infants younger than 6 months who are fed non-iron-fortified infant formula.

Screen at 9 to 12 months, and rescreen 6 months later (at 15 to 18 months), infants and children with the following risk factors:

- Infants born preterm or with low birthweight
- Infants fed non-iron-fortified infant formula for more than 2 months
- Infants fed cow's milk before 12 months of age

- Breastfed infants not receiving enough iron after 6 months of age
- Children consuming more than 24 oz of cow's milk per day after 12 months of age
- Children with special health care needs who use medications that interfere with iron absorption and those with chronic infection or inflammation, restricted diets, or extensive blood loss

Annually screen children ages 2 to 5 who

- Consume a diet low in iron
- Have limited access to food because of poverty or neglect
- Have special health care needs

Children Ages 5 to 12 and Adolescent Males Ages 12 to 18

Screen only those with known risk factors (e.g., low iron intake, special health care needs, history of anemia).

Adolescent Females Ages 12 to 18 and Nonpregnant Women of Childbearing Age

Annually screen those with known risk factors (e.g., excessive menstrual or other blood loss, low iron intake, a history of anemia). Screen every 5 to 10 years during routine health examinations.

Pregnant Adolescents and Women

Screen at first prenatal care visit.

Males Ages 18 and Older

No routine screening is recommended. Evaluate iron-deficiency anemia detected during routine health examinations.

AAP Recommendations for Additional Screening^{2,3}

- Screen *all* infants at 9 to 12 months, not just those at high risk or with known risk factors.
- Screen adolescent males during routine health examinations in their peak growth period.
- Screen adolescent females during all routine health examinations.

Additional Risk Factors for Iron-Deficiency Anemia¹

- Periods of rapid growth
- Low intake of meat, fish, poultry, or foods rich in ascorbic acid
- Macrobiotic diets
- Meal skipping, frequent dieting
- Pregnancy or recent pregnancy
- Participation in endurance physical activities (e.g., long-distance running, swimming, biking)
- Intensive physical training

- Recent blood loss, heavy/lengthy menstrual periods
- Chronic use of aspirin or non-steroidal anti-inflammatory drugs (e.g., ibuprofen)
- Parasitic infections

References

1. Centers for Disease Control and Prevention. 1998. Recommendations to prevent and control iron deficiency in the United States. *MMWR* 47(No. RR-3).
2. American Academy of Pediatrics, Committee on Nutrition. 1998. *Pediatric Nutrition Handbook* (4th ed.). Elk Grove Village, IL: American Academy of Pediatrics.
3. American Academy of Pediatrics, Committee on Psychological Aspects of Child and Family Health. 1997. *Guidelines for Health Supervision III*. Elk Grove Village, IL: American Academy of Pediatrics.

For more information, see *Bright Futures in Practice: Nutrition, Iron-Deficiency Anemia* chapter.

LEAD EXPOSURE

CDC Screening Recommendations

The following information is based on CDC's lead screening guidance for state and local public health officials.¹ AAP supports the CDC guidelines for universal or targeted screening.

Based on its current preventive health care recommendations, AAP suggests that infants and children at risk should be screened for elevated blood lead levels beginning at 9 to 12 months, and rescreened at 24 months.^{2,3}

Note that federal Medicaid policy requires that all Medicaid-eligible children be screened for elevated blood lead levels, based on the following universal screening recommendations.

Universal Screening

Universal screening is recommended in communities in which the risk of lead exposure is widespread. A sample universal screening recommendation follows.¹

Sample Universal Screening

Using a blood lead test, screen all children at ages 1 and 2, and all children 36–72 months of age who have not been previously screened.

Targeted Screening

Targeted screening is recommended in communities in which the risk of lead exposure is not widespread. A sample targeted screening recommendation follows.¹

Sample Targeted Screening

Using a blood lead test, screen children at ages 1 and 2, and all children 36–72 months of age who have not been previously screened, if they meet one of the following health department criteria:

- Child resides in a geographic area (e.g., a specified zip code) in which ≥ 27 percent of housing was built before 1950
- Child receives services from public assistance programs such as Medicaid or WIC
- Child's parent or guardian answers "yes" or "don't know" to any of the three questions in the basic personal-risk questionnaire

A Basic Personal-Risk Questionnaire for Lead Exposure in Children

1. Does your child live in or regularly visit a house or child-care facility that was built before 1950?
2. Does your child live in or regularly visit a house or child-care facility built before 1978 that is being or has recently been renovated or remodeled (within the last 6 months)?
3. Does your child have a sibling or playmate who has or did have lead poisoning?

Source: Reproduced with permission from American Academy of Pediatrics,² based on CDC.¹ Copyright © 1998 American Academy of Pediatrics.

History of Possible Lead Exposure

Periodically assess infants and children ages 6 months to 6 years for a history of possible lead exposure, using the basic personal-risk questionnaire and asking any additional questions recommended by the state or local health department. Screening is suggested for abused or neglected children and for children who have conditions associated with increased lead exposure.²

References

1. Centers for Disease Control and Prevention. 1997. *Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials*. Atlanta, GA: Centers for Disease Control and Prevention. Also in Centers for Disease Control and Prevention [Web site]. Cited May 14, 1999; available at <http://www.cdc.gov/nceh/programs/lead/guide/1997/guide97.htm>.
2. American Academy of Pediatrics. 1998. Screening for elevated blood lead levels [policy statement no. RE9815]. *Pediatrics* 101(6):1072–1078. Also in American Academy of Pediatrics [Web site]. Cited May 14, 1999; available at <http://www.aap.org/policy/re9815.html>.
3. American Academy of Pediatrics. 2000. *Recommendations for Preventive Pediatric Health Care* (RE9939). Available in American Academy of Pediatrics [Web site]. Cited August 7, 2000; available at <http://www.aap.org/policy/RE9939.html>.

OBESITY

Obesity is the presence of excess adipose (fatty) tissue in the body. It is a complex chronic disease involving genetics, metabolism, and physiology, as well as environmental and psychosocial factors.

Prevention

The most important strategies for preventing obesity are healthy eating behaviors, regular physical activity, and reduced sedentary activity. Suggestions include the following:

- Limiting duration of bottle-feeding
- Ensuring appropriate use of lower fat milk after 2 years of age
- Limiting consumption of high-sugar foods

- Being aware of portion sizes
- Limiting frequency of fast-food meals
- Encouraging family members to drink water
- Physical activity is recommended on most, if not all, days of the week.

These strategies are part of a healthy lifestyle that should be developed during early childhood.

Screening

- Calculate child's or adolescent's body mass index (BMI) by dividing weight by the square of height (kg/m^2) or by referring to a BMI chart. BMI reflects body mass and the amount of subcutaneous and total body fat.
- Elevated triceps skinfold (above 95th percentile) can confirm excess body fat.

For Children Older than 2

- A BMI at or above 95th percentile indicates overweight, requiring in-depth assessment of child or adolescent.
- A BMI between 85th and 95th percentiles indicate risk for becoming overweight. A child or adolescent with such a BMI should be screened and assessed carefully, with particular attention paid to family history and secondary complications of obesity (hypertension, dyslipidemia).
- A child or adolescent with an annual increase of 3 to 4 BMI units should be evaluated.

Assessment

Conduct an in-depth assessment to identify children and adolescents who are obese, diagnose any underlying causes, and provide a basis for treatment.

Medical History

Identify underlying syndromes or secondary complications.

Family History

Identify familial risks for obesity (presence of obesity, eating disorders, type 2 diabetes mellitus, cardiovascular disease, hypertension, dyslipidemia, gallbladder disease in siblings, parents, aunts, uncles, or grandparents).

Dietary History

Identify eating behaviors that may lead to excessive caloric intake.

Physical Activity History

Identify activity levels and determine time spent in sedentary behaviors. Note history of medical contraindications (asthma, joint disease) to physical activity.

Physical Examination

Determine the degree of overweight (by plotting height, weight, and BMI on a standard growth chart) and potential underlying syndromes or complications of obesity.

Laboratory Testing

Choose laboratory tests based on degree of overweight, family history, and physical examination.

Psychological Evaluation

Evaluate child's, adolescent's, and family's readiness to change by asking whether the family is concerned about their child's or

adolescent's weight, whether they believe weight loss is possible, and what behaviors should be changed.

Treatment

- The primary goal of treatment is to achieve healthy eating and physical activity behaviors and psychological well-being, rather than obtaining ideal body weight.
- A secondary goal of treatment is to achieve a BMI at or below 85th percentile.
- Treatment should emphasize skills needed to change behaviors and maintain changes.
- Weight maintenance is the first step toward weight control.
- Weight loss, if warranted, should be about 1 pound per month.

Referral

- Refer child or adolescent with an eating disorder to an eating disorder program that incorporates psychological assessment/treatment, medical assessment/treatment, and nutrition counseling.
- Refer child or adolescent with depression for psychological evaluation and treatment.
- Children and adolescents with serious complications of obesity (pseudotumor cerebri, sleep apnea, obesity hypoventilation syndrome, Blount's disease [tibia vara], slipped capital femoral epiphysis, severe overweight [above 99th percentile]) need to be closely monitored and referred to an obesity treatment program.

For more information, see *Bright Futures in Practice: Nutrition, Obesity* chapter.

NUTRITION TOOLS



KEY INDICATORS OF NUTRITION RISK

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Food Choices		
<p>Consumes fewer than 2 servings of fruit or fruit juice per day.</p> <p>Consumes fewer than 3 servings of vegetables per day.</p>	<p>Fruits and vegetables provide dietary fiber, vitamins (such as A and C), and minerals. Low intake of fruits and vegetables is associated with an increased risk of many types of cancer. In females of childbearing age, low intake of folic acid is associated with increased risk of giving birth to an infant with neural tube defects.</p>	<p>Assess the child/adolescent who is consuming less than 1 serving of fruit or fruit juice per day.</p> <p>Assess the child/adolescent who is consuming fewer than 2 servings of vegetables per day.</p>
<p>Consumes fewer than 6 servings of bread, cereal, rice, pasta, or other grains per day.</p>	<p>Grain products provide complex carbohydrates, dietary fiber, vitamins, and minerals. Low intake of dietary fiber is associated with constipation and increased risk of colon cancer.</p>	<p>Assess the child/adolescent who is consuming fewer than 3 servings of bread, cereal, pasta, rice, or other grains per day.</p> <p>Assess the child/adolescent who has recent history of constipation.</p>

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Food Choices (cont.)		
<p>For children younger than 9 years, consumes fewer than 2 servings of dairy products per day.</p> <p>For children 9 years and older and adolescents, consumes fewer than 3 servings of dairy products per day.</p>	<p>Dairy products are a good source of protein, vitamins, and calcium and other minerals. Low intake of dairy products may reduce peak bone mass and increase the risk of osteoporosis.</p>	<p>Assess the child (younger than 9 years) who is consuming less than 1 serving of dairy products per day.</p> <p>Assess the child (9 years and older) or adolescent who is consuming fewer than 2 servings of dairy products per day.</p> <p>Assess the child/adolescent who has a milk allergy or is lactose intolerant.</p> <p>Assess the child/adolescent who is consuming more than 2 soft drinks per day.</p>

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Food Choices (cont.)		
Consumes fewer than 2 servings of meat or meat alternatives (e.g., beans, eggs, nuts, seeds) per day.	Protein-rich foods (e.g., meats, beans, dairy products) are good sources of B vitamins, iron, and zinc. Low intake of protein-rich foods may impair growth and increase the risk of iron-deficiency anemia and of delayed growth and sexual maturation. Low intake of meat or meat alternatives may indicate inadequate availability of these foods at home. Special attention should be paid to children and adolescents who follow a vegetarian diet.	Assess the child/adolescent who is consuming less than 1 serving of meat or meat alternatives per day.
For children 5 years and older, has excessive intake of dietary fat.	Excessive intake of dietary fat contributes to the risk of cardiovascular disease and obesity and is associated with some cancers.	Assess the child/adolescent who has a family history of premature cardiovascular disease. Assess the child/adolescent who has a body mass index (BMI) greater than or equal to the 85th percentile.

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Eating Behaviors		
Exhibits poor appetite.	A poor appetite may be developmentally appropriate for young children, but in older children it may indicate depression or other emotional stress or chronic disease.	<p>Assess the child/adolescent if BMI is less than the 15th percentile or if weight loss has occurred.</p> <p>Assess if irregular menses or amenorrhea has occurred for 3 months or more.</p> <p>Assess for organic and psychiatric disease.</p>
Consumes food from fast-food restaurants 3 or more times per week.	Excessive consumption of convenience foods and foods from fast-food restaurants is associated with high fat, calorie, and sodium intake, as well as low intake of certain vitamins and minerals.	Assess the child/adolescent who is overweight/obese or who has diabetes mellitus, hyperlipidemia, or other conditions requiring reduction in dietary fat.

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Eating Behaviors (cont.)		
Skips breakfast, lunch, or dinner/ supper 3 or more times per week.	Meal skipping is associated with a low intake of energy and essential nutrients and, if it is a regular practice, could compromise growth and sexual development. Repeatedly skipping meals decreases the nutritional adequacy of the diet.	Assess the child/adolescent to ensure that meal skipping is not due to inadequate food resources or unhealthy weight-loss practices.
Has food jags—eats one particular food only.	Food jags, which limit the variety of food consumed, decrease the nutritional adequacy of the diet.	Assess the child's/adolescent's dietary intake over several days.
Food Resources		
Has inadequate financial resources to buy food, insufficient access to food, or lack of access to cooking facilities.	Poverty can result in hunger and compromised food quality and nutrition status. Inadequate dietary intake interferes with learning.	Assess the child/adolescent who is from a family with low income, is homeless, or is a runaway.

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Weight and Body Image		
<p>Practices unhealthy behaviors (e.g., chronic dieting, vomiting, and using laxatives, diuretics, or diet pills to lose weight).</p>	<p>Chronic dieting is associated with many health concerns (e.g., fatigue, impaired growth and sexual maturation, irritability, poor concentration, impulse to binge) and can lead to eating disorders. Frequent dieting in combination with purging is associated with health-compromising behaviors (e.g., substance use, suicidal behaviors). Purging is associated with serious medical complications.</p>	<p>Assess the child/adolescent for eating disorders.</p> <p>Assess for organic and psychiatric disease.</p>
<p>Is excessively concerned about body size or shape.</p>	<p>Eating disorders are associated with significant health and psychosocial morbidity. Eighty-five percent of all cases of eating disorders begin during adolescence. The earlier adolescents are treated, the better their long-term prognosis.</p>	<p>Assess the child/adolescent for distorted body image and dysfunctional eating behaviors, especially if child/adolescent wants to lose weight but BMI is less than the 85th percentile.</p>

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Weight and Body Image (cont.)		
Exhibits significant weight change in past 6 months.	Significant weight change during the past 6 months may indicate stress, depression, organic disease, or an eating disorder.	Assess the child/adolescent to determine the cause of weight loss or weight gain (e.g., limited or too much access to food, poor appetite, meal skipping, eating disorder).
Growth		
Has BMI less than the 5th percentile.	Thinness may indicate an eating disorder or poor nutrition.	<p>Assess the child/adolescent for eating disorders.</p> <p>Assess for organic or psychiatric disease.</p> <p>Assess for inadequate food resources.</p>
Has BMI greater than the 95th percentile.	Obesity is associated with elevated cholesterol levels and elevated blood pressure. Obesity is an independent risk factor for cardiovascular disease and type 2 diabetes mellitus in adults. Overweight children and adolescents are more likely to be overweight adults and are at increased risk for health problems as adults.	Assess the child/adolescent who is overweight or at risk for becoming overweight (e.g., on the basis of present weight, weight gain patterns, family weight history).

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Physical Activity		
<p>Is physically inactive: participates in physical activity fewer than 5 days per week.</p>	<p>Lack of physical activity is associated with overweight, fatigue, and poor muscle tone in the short term, and a greater risk of cardiovascular disease in the long term. Regular physical activity reduces the risk of cardiovascular disease, hypertension, colon cancer, and type 2 diabetes mellitus. Weight-bearing physical activity (e.g., walking, hiking) is essential for normal skeletal development during childhood. Regular physical activity is necessary for maintaining normal muscle strength, joint structure, and joint function; contributes to psychological health and well-being; and facilitates weight reduction and weight maintenance throughout life.</p>	<p>Assess how much time the child/adolescent spends watching television/videotapes and playing computer games.</p> <p>Assess the child's/adolescent's definition of physical activity.</p>

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Physical Activity (cont.)		
Participates in excessive physical activity.	Intense physical activity nearly every day, sometimes more than once a day, can be unhealthy and associated with menstrual irregularity, excessive weight loss, and malnutrition.	Assess the child/adolescent for eating disorders.
Medical Conditions		
Has chronic diseases or conditions.	Medical conditions (e.g., diabetes mellitus, spina bifida, renal disease, hypertension, pregnancy, HIV infection/AIDS) have significant nutritional implications.	Assess child's/adolescent's compliance with therapeutic dietary recommendations. Refer to dietitian if appropriate.
Has hyperlipidemia.	Hyperlipidemia is a major cause of atherosclerosis and cardiovascular disease in adults.	Refer child/adolescent to a dietitian for cardiovascular nutrition assessment.

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Medical Conditions (cont.)		
<p>Has iron-deficiency anemia.</p>	<p>Iron deficiency causes developmental delays and behavioral disturbances. Another consequence is increased lead absorption. Childhood lead poisoning causes neurological and developmental deficits.</p>	<p>Screen children whose families have low incomes, are migrant, or are recently arrived refugees.</p> <p>Screen male children/adolescents who have low iron intake, a history of iron-deficiency anemia, limited access to food because of poverty or neglect, or special health care needs.</p> <p>Screen nonpregnant adolescents every 5 to 10 years or annually if they have a history of iron-deficiency anemia, low iron intake, or extensive menstrual or other blood loss.</p>

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Medical Conditions (cont.)		
Has dental caries.	Food affects the health of the mouth as well as overall health. Calcium and vitamin D are vital for strong bones and teeth, and vitamin C is necessary for healthy gums. Eating habits have a direct impact on oral health. Frequent consumption of carbohydrate-rich foods (e.g., lollipops, soda) that stay in the mouth longer may cause dental caries. Fluoride in water used for drinking and cooking as well as in toothpaste reduces the prevalence of dental caries.	<p>Assess the child's/adolescent's consumption of snacks and beverages that contain sugar, and assess snacking patterns.</p> <p>Assess the child's/adolescent's access to fluoride (e.g., fluoridated water, fluoride tablets).</p>
Is pregnant.	Pregnancy increases the need for most nutrients.	Refer the adolescent to a dietitian for further assessment, education, and counseling as appropriate.
Is taking prescription medication.	Many medications interact with nutrients and can compromise nutrition status.	Assess potential interactions of prescription drugs (e.g., asthma medications, antibiotics) with nutrients.

Indicators of Nutrition Risk	Relevance	Criteria for Further Screening and Assessment
Lifestyle		
Engages in heavy alcohol, tobacco, and other drug use.	Alcohol, tobacco, and other drug use can adversely affect nutrient intake and nutrition status.	Assess the child/adolescent further for alcohol, tobacco, and other drug use.
Uses dietary supplements.	Dietary supplements (e.g., vitamin and mineral preparations) can be healthy additions to a diet, especially for pregnant and lactating women and for people with a history of iron-deficiency anemia; however, frequent use or high doses can have serious side effects. Adolescents who use supplements to “bulk up” may be tempted to experiment with anabolic steroids.	Assess the child/adolescent for the type of supplements used and dosages. Assess the adolescent for use of anabolic steroids and megadoses of other supplements.

TIPS FOR PROMOTING PHYSICAL ACTIVITY

General

- Encourage children and adolescents to participate in physical activity on most, if not all, days of the week.
- Provide opportunities for physical activity.
- Make physical activity enjoyable.
- Support children's and adolescent's physical activity efforts.
- Encourage children and adolescents to participate in physical activities they can continue throughout life.
- Help children and adolescents succeed and increase their confidence in physical activity.
- Teach children and adolescents about the benefits of physical activity and help them develop positive attitudes toward it.

- Adapt activities to children and adolescents with special health care needs.
- Help children and adolescents overcome physical activity barriers.

At Home

For Children and Adolescents

- Help with household chores to incorporate physical activity into daily life (walk the dog, vacuum, mow the lawn, rake the leaves).

For Parents

- Schedule time for physical activity.
- Take turns selecting physical activities family members and friends can do together.
- Participate in physical activity with your children and adolescents.

- Provide toys, games, and equipment that promote physical activity.
- Teach children to play safely (not playing in the street).
- Provide appropriate safety equipment (helmet, wrist guards, elbow and knee pads) and ensure that children and adolescents use it during physical activity.
- Ensure that children and adolescents use sunscreen to reduce their exposure to sunlight.
- Ensure that children and adolescents drink enough water before, during, and after physical activity.
- Limit the time your children and adolescents spend watching TV and videotapes and playing computer games to 1 to 2 hours a day.

In the Community

For School Personnel and Community Program Staff

- Offer physical education in school.
- Offer physical activity programs during nonschool hours (after school, on weekends, during the summer).
- Provide older children and adolescents with a mix of competitive and noncompetitive physical activities.
- Set goals for increasing physical activity levels and keep track of progress.
- Provide programs that teach families about physical and motor skill development.
- Provide appropriate safety equipment and ensure that children and adolescents use it during physical activity.

- Provide enough water for children and adolescents before, during, and after physical activity.
- Make physical activity programs accessible to children and adolescents from families with low incomes by providing transportation and appropriate equipment.
- Maintain policies (preservation of green space) and provide environmental support to promote physical activity.
- Provide safe environments for indoor and outdoor physical activity (biking paths, playgrounds, parks).

For Parents

- Advocate for physical education in school.
- Help with physical activity programs at your child's or adolescent's school.

- Encourage schools to offer opportunities for physical activity during nonschool hours.
- Adopt a highway, park, or beach, and keep it clean.
- Organize family outings that include physical activity.
- Identify safe places for children and adolescents to participate in physical activity.
- Identify activities and places for participating in physical activity (basketball and tennis courts, community swimming pools) at no or reduced cost.
- Work with the community to ensure that children and adolescents from families with low incomes have transportation to and from physical activity programs, and appropriate safety equipment.

TIPS FOR PROMOTING FOOD SAFETY

Keep Everything Clean

- Wash hands before preparing or eating food and after doing anything that interrupts either activity.
- Wash fresh fruits and vegetables carefully before cooking them or eating them raw.
- Wash dishes in a dishwasher or in hot soapy water using a clean dishcloth. Don't use sponges—they often spread germs. Rinse and sanitize dishes and let them air dry.
- Wash cutting boards thoroughly with hot soapy water between uses for different foods, especially after using them to cut raw meat. Only use cutting boards made of nonporous materials.

Prepare Foods Properly

- Cook foods thoroughly, especially foods containing meat, poultry, fish, or eggs. Cook hamburger until it is brown or gray on the inside. Cook chicken until juices are clear when a knife or fork is stuck into it. Cook fish until it is opaque and flakes easily with a fork. Cook eggs until they are firm.
- Thaw frozen foods in the refrigerator or under cold running water—never on the counter or in a bowl of standing water.
- When serving foods, make sure hot foods stay above 140°F and cold foods stay below 40°F.

Store Foods Safely

- Serve cooked foods stored in the refrigerator within 24 hours.
- Store raw foods underneath cooked and ready-to-eat foods in the refrigerator.
- Store dry ingredients (rice, sugar) in nonporous containers with tight-fitting lids.
- Cover and refrigerate or freeze cooked foods if they will not be eaten right away.
- Leftovers that are refrigerated or frozen should be reheated one time only.
- Reheat liquids (gravy, soup, sauce) by bringing them to a boil. Reheat solid foods at 165°F.
- Store cleaning products and medications away from food and out of children's reach.